

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS

OFFICE MEMORANDUM

EPA Region 5 Records Ctr.



309321

DATE: June 3, 2008

TO: Jaworski, Mark, OLQ SI

THRU: Admire, Beth, OLC
Hauer, Gabriele, OLQ SI

FROM: Smith, Jim R., OLC, NRDA

SUBJECT: USS Lead Site HRS – Particular Areas, Relatively Small in Size, Important to Maintenance of Unique Biotic Communities,

and Bibliographic Information on Dr. Jim Smith (attached as Appendix A)

Particular Areas, Relatively Small in Size, Important to Maintenance of Unique Biotic Communities are: "Areas that are important for the maintenance of unique, rare, or otherwise ecologically valuable biotic communities. . . . [including] . . . Areas with a high proportion of species with highly restrictive habitat requirements due to unusual natural biotic and/or abiotic conditions; highly isolated area that may not have an unusual community structure per se, but because of its geographic isolation is particularly important to the continued existence of that community; areas with a high proportion of species that are locally endemic because of a relatively long period of geographical isolation and/or exceptional examples of "climax" communities because of minimal human disturbance; or areas vital for a species that are important to the maintenance of a community" (US EPA 1992).

The USS Lead site provides several of these functions to the Grand Calumet River Corridor providing a continuity to riverine wetlands, natural areas (some protected by State ownership, dedicated Natural Areas, sensitive biotic communities and globally rare Dune and Swale habitat) (see Figure 1 below and previous Memo by Smith (2008. HRS Ref. 91) for details of USS Lead site communities). Protection of the USS Lead site and the Dune and Swale Remnants as well as the on-site wetlands (HRS and others) provide a link between rare and fragmented habitats along the river corridor. The following text, Table 1, and Figure 1 provide details of community and habitat components that provide evidence of unique function of corridor connectivity that the USS Lead site serves, meeting many of the definition requirements listed above for this Sensitive Environment type.

Threatened & Endangered Species

The Indiana Department of Natural Resources Heritage Database contains a list of several hundred potentially endangered, threatened, rare, of special concern, extirpated, and watch list species that occur in Lake County, Indiana. Of those species in Lake County, a small subdivision occurs or

Reference: #112

potentially could occur within the GCR-IHC. Table 1 provides a summary of county/GCR-IHC Rare and Endangered species in the database.

Table 1 – Summary of T&E species in GCR - IHC AOC, Indiana.

Group	LE	LT	C	PDL	SE	ST	SR	SSC	SX	SG	WL
Plant		2			31	23	38		6		4
Plant Community											13
Mollusk											
Insect	3				5	8	7		2		1
Fish					1						
Amphibian								3			
Reptile			1		4			1			
Bird	1	1		3*	13			2	1		
Migratory Bird Area											
Mammal					1						

Federal Listings: LE – Endangered; LT- Threatened; C – Candidate; PDL – Proposed for delisting

State Listings: SE – Endangered; ST – Threatened; SR – Rare; SSC – Special Concern; SX – Extirpated; WL – Watch List; SG – Special Group

* Birds have been delisted by USFWS and have no current ESA status

Of those rare, threatened or endangered species that occur in the GCR-IHC AOC, the following have been recorded within ½ mile of Grand Calumet River Corridor between Gary and Hammond (see Figure 1 for area of consideration:

Insects

- *Atrytonopsis hianna* (Dusty Skipper) - ST
- *Grammia oithona* (Oithona's Grammia) – SR
- *Hesperia leonardus* (Leonardus Skipper) – SR
- *Lycaeides melissa samuelis* (Karner Blue Butterfly) – SE, LE
- *Peoria gemmatella* (Gemmed Cordgrass Borer) – SR
- *Problema byssus* (Bunchgrass Skipper) – ST
- *Semiothisa eremiata* (The Goat's Rue Looper) – SR

Reptiles and Amphibians

- *Ambystoma laterale* (Blue-spotted Salamander) – SSC
- *Rana pipiens* (Northern Leopard Frog) – SSC
- *Emydoidea blandingii* (Blanding's Turtle) – SE
- *Sistrurus catenatus catenatus* (Eastern Massasauga) - SE, C
- *Ophisaurus attenuatus* (Slender Glass Lizard) - NS

Birds

- *Ardea alba* (Great Egret) – SSC
- *Bartramia longicauda* (Upland Sandpiper) – SE
- *Botaurus lentiginosus* (American Bittern) – SE
- *Certhia Americana* (Brown Creeper) – SR
- *Chlidonias niger* (Black Tern) – SE
- *Cistothorus platensis* (Sedge Wren) – SE
- *Cistothorus palustris* (Marsh Wren) – SE
- *Haliaeetus leucocephalus* (Bald Eagle) – SE

- *Ixobrychus exilis* (Least Bittern) – SE
- *Nycticorax nycticorax* (Black-crowned Night-heron) – SE
- *Rallus elegans* (King Rail) – SE
- *Rallus limicola* (Virginia Rail) – SE
- *Xanthocephalus xanthocephalus* (Yellow-headed Blackbird) – SE

Mammals

- *Spermophilus franklinii* (Franklin's Ground Squirrel) – SE

Plants

- *Agalinis skinneriana* (Pale False Foxglove) – ST
- *Arctostaphylos uva-ursi* (Bearberry) – SR
- *Carex atherodes* (Lake sedge) – ST
- *Carex aurea* (Golden-fruited Sedge) – SR
- *Carex bebbii* (Bebb's Sedge) – ST
- *Carex brunnescens* (Brownish Sedge) – SE
- *Carex crawei* (Crawe Sedge) – ST
- *Carex garberi* (Elk Sedge) – ST
- *Carex limos* (Mud Sedge) – SE
- *Carex richardsonii* (Richardson Sedge) – ST
- *Diervilla lonicera* (Northern Bush Honeysuckle) – SR
- *Eleocharis geniculata* (Capitate Spike-rush) – ST
- *Eriophorum angustifolium* (Narrow-leaved Cotton-grass) – SR
- *Juncus balticus* var. *littoralis* (Baltic Rush) – SR
- *Lechea stricta* (Upright Pinweed) – SX
- *Melampyrum lineare* (American Cow-wheat) – SR
- *Platanthera hookeri* (Hooker Orchis) – SX
- *Platanthera hyperborea* (Leafy Northern Green Orchis) – ST
- *Platanthera psycodes* (Small Purple-fringe Orchis) – SR
- *Polygonella articulata* (Eastern Jointweed) – SR
- *Potamogeton pulcher* (Spotted Pondweed) – SE MU
- *Prunus pensylvanica* (Fire Cherry) – SR
- *Rhus aromatica* var. *arenaria* (Beach Sumac) – SR
- *Selaginella apoda* (Meadow Spike-moss) – SWL
- *Solidago ptarmicoides* (Prairie Goldenrod) – SR
- *Solidago simplex* var. *gillmanii* (Sticky Goldenrod) – ST
- *Talinum rugospermum* (Prairie Fame-flower) – ST
- *Tofieldia glutinosa* (False Asphodel) – SR

Natural Areas

In addition to the rare, threatened or endangered species listed above, several Nature Preserves and/or Natural Areas are located within or bordering the study area (Figure 1). Plant communities identified as "Special Groups" in the Heritage Database occur concurrent with some of the natural sites. These sites are described below.

Roxanna Pond (Marsh) Site – Located at the western edge of Grand Calumet River corridor depicted in Figure 1 and comprising a wetland shelf, Roxanna Marsh was a premier birding site prior the

decline in Lake Michigan water level in the late 1990's. Exposure of mud flats and shallow open-water areas has resulted in near complete invasion of the marsh with common reed, cattails and purple loosestrife. Past records of occurrences of Least Bittern, Black-crowned Night-heron, Virginia Rail, Black Tern, Marsh Wren, and Yellow-headed Cowbirds are not likely to occur now because of sediment contamination and physical habitat change. In addition, occurrences of Northern Leopard Frog and Franklin's Ground Squirrel are not likely today because of the habitat changes.

Seidner Dune and Swale Nature Preserve and GCR Tern Site – Located on south side of river just east of the USS Lead site and includes a wetland shelf in the northern portion of the site. The Nature Preserve contains remnant dune and swale habitat and records of Franklin's Ground Squirrel, Great Egret, Black Tern, Marsh Wren, Leonard's Skipper, Gemmed Cordgrass Borer, Goat's Rue Looper, and Oithona's Grammia as well as Baltic's Rush. Blue lupine (*Lupinus perennis* L.) is common in the area south of the wetland shelf, thus the federally endangered Karner Blue Butterfly is likely to occur on this site. The wetland shelf is dominated by common reed and cattails.

DuPont Dune and Swale Site – This natural area is located on the north side of the river, just north of Seidner Dune and Swale Nature Preserve and east of the USS Lead site. A wetland shelf is included within this area immediately adjacent to the river. The Natural Resource Trustees are working with DuPont to place a conservation easement on this natural area (as part of the NRDA Settlement). Records of King Rail, Franklin's Ground Squirrel, Blanding's Turtle, Northern Bush-honeysuckle, Prairie Goldenrod, Golden-fruited Sedge, Bebb's Sedge, Narrow-leaved Cotton-grass, Baltic Rush, and Meadow Spike-rush exist for this site. Additionally, Dry-mesic Sand Prairie, Wet-mesic Sand Prairie, and Dry Sand Prairie plant communities have been found on the site. Restoration completed by The Nature Conservancy has established Blue Lupine and Karner Blue Butterflies are now utilizing the site (Paul Labus, Personal Communication).

Cline Avenue Nature Preserve and Cline Avenue Dune and Swale Site - This site is located approximately 1/2 mile south of Grand Calumet River and is south of the I90 Toll Road. The site contains Northern Bush-honeysuckle and has Dry-mesic Sand Prairie, Dry-mesic Sand Savanna, and Shrub Swamp Wetland plant communities.

Ivanhoe Dune and Swale, Ivanhoe Dune and Swale Nature Preserve - This site is located within a 1/2-mile buffer zone of the project site, but is located south of the I90 Toll Road. The site is a dedicated Nature Preserve and has records of Blue-spotted Salamander, Blanding's Turtle, Virginia Rail, Brown Creeper, Slender Glass Lizard, Bunchgrass Skipper, Dusted Skipper, Karner Blue, Beach Sumac, Northern Bush-honeysuckle, Fire Cherry, Baltic Rush, and Leafy Northern Green Orchid. Additionally, plant communities associated with Pond, Dry-mesic Sand Prairie, Mesic Sand Prairie, Wet Sand Prairie, Dry-mesic Sand Savanna, Mesic Sand Savanna, Marsh, and Shrub Swamp exist at the site.

Clark and Pine East, Pine Station Nature Preserve - This site is located immediately east of Reach 4F of the project site. The site has records of Least Bittern, Virginia Rail, Marsh Wren, Franklin's Ground Squirrel, Spotted Turtle (more than 1/2 mile away), Blanding's Turtle, Slender Glass Lizard, Eastern Massasauga, Dusted Skipper, a Noctuid moth, Hill's Thistle, Prairie Goldenrod, Bearberry, Pale False Foxglove, American Cow-wheat, Golden-fruited Sedge, Brownish Sedge, Crawe Sedge, Elk Sedge, Richardson Sedge, Capitate Spike-rush, False Asphodel, Small Yellow Lady's-slipper (more than 1/2 mile away), and Spotted Pondweed (more than 1/2 mile away). The project is not anticipated to have any impact on this site. Plans will be developed to avoid physical disturbance of this site during access and restoration activities.

Other wetland shelves, remnant Dune and Swale habitat, and unique communities are depicted on Figure 1 below.

References

- Smith, J.R. 2008. IDEM Office Memorandum to Jaworski, Mark, IDEM, USS Lead Site, East Chicago, Lake County, Indiana, March 12, 2008. 95 pages.
- U.S. EPA 1992. Hazard Ranking System Guidance Manual. Office Solid Waste and Emergency Response. EPA 540-R-92-026. November, 1992.

Appendix A

Bibliographical Information

James (Jim) R. Smith, Ph.D.
Office of Legal Counsel (NRDA Program)
Indiana Department of Environmental Management
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Educational Background:

B.S. - Eastern Kentucky University, 1970 - Biological Sciences/Wildlife Management
M.S. - Eastern Kentucky University, 1975 - Biological Sciences/Wildlife Biology
Ph.D. - Southern Illinois University-Carbondale, 1986 - Zoology/Wildlife and Plant Ecology

Current Position: Senior Environmental Manager (Natural Resource Damage Coordinator)

Office of Legal Counsel, Natural Resource Damage Program
Indiana Department of Environmental Management

Dr. Smith has worked for the Indiana Department of Environmental Management (IDEM) since 1990. Started in Office of Water Enforcement and after a year moved to Office of Environmental Response Superfund Program. Jim currently coordinates the Natural Resource Damage Program in IDEM which seeks to obtain damages (\$) for injuries to Indiana's natural resources from the release of hazardous substance and/or spills of oil. Injury assessment involves characterization of chemical, biological and physical impacts to areas, media, and biota. Successful settlements and/or claims are utilized to restore, rehabilitate or acquire the equivalent of the injured natural resources. Restoration efforts include acquisition and protection of habitat through outright purchase, conservation easement or partnering with private or public land holding interests; and restoration of riparian and/or upland habitats through creation, enhancement or rehabilitation (eliminating ecological stresses). Jim has worked on or around the Grand Calumet River Area of Concern since 1992. He has conducted sediment, water, fish community, wetland plant community, fish tissue, sediment toxicity and invertebrate community analyses. Jim is currently working on a Feasibility Study with US Army Corps of Engineers and two Great Lakes Legacy Act projects with US EPA on the Grand Calumet River. Jim has received numerous recognitions for his work including being

awarded Commission of "Colonel" on the Staff of the Governor of Kentucky in the "Honorable Order of Kentucky Colonels", twice awarded Indiana Department of Environmental Management's Environmental Excellence Award (the agency's highest award) for work in the NRD program and Remedial Action Plan Development for the Grand Calumet River, Indiana Harbor and Ship Canal Area of Concern and several Environmental Impact Awards for NRD activities. Jim has held positions of President-Elect, President, Past President and Board Member of Ohio Valley Regional Chapter of SETAC, member of Indiana Chapter American Fisheries Society, member of States Ad-Hoc NRD Work Group, member Great Lakes NRD Roundtable Steering Committee and member of Sediment Advisory Group.

Experience:

Technical Advisor and Natural Resource Damage Coordinator,
IDEM-OER- 1994 - present

Ecological Risk/ NRDA/ ARARs/Project Management - Superfund,
IDEM-OER - 1992 - 1994

Remedial Project Manager, Superfund, IDEM-OER, 1991 - 1992

Enforcement, IDEM, Water Management - 1990 - 1991

University Administration/ Undergraduate Registration,
Southern Illinois University-Carbondale, 1983 - 1989

College Teacher - Illinois College, 1983

Wildlife Researcher (Mined Land Research), Cooperative
Wildlife Research Laboratory, Southern Illinois
University-Carbondale, 1979-1982

Chemist, Kentucky Department of Agriculture, State -Federal
Meat Inspection Laboratory, Frankfort, KY, 1975

Recent Publications

Simon, T.P., G. Bright, F. Veraldi, J.R. Stahl, and J.R. Smith. 2006. New distribution records for the alien oriental weatherloach *Misgurnus audracaudatus* in the Lake Michigan drainage, Indiana. *Proceedings of the Indiana Academy of Science* 115: 32-36.

Simon, T.P., P.M. Stewart, D.W. Sparks, A. Piene, and J.R. Smith. 2004. Implications of Chinook salmon presence on water quality standards in a Great Lakes Area of Concern. *Proceedings of the Indiana Academy of Science* 113: 133-139.

MacDonald, D.D., C.G. Ingersoll, D.E. Smorong, R.A. Lindscoog, D.W. Sparks, J.R.

- Smith, T.P. Simon, and M.A. Hanacek. 2002. Assessment of injury to fish and wildlife resources in the Grand Calumet River and Indiana Harbor Area of Concern, USA. *Archives of Environmental Contamination and Toxicology* 43: 130-140.
- MacDonald, D.D., C.G. Ingersoll, D.E. Smorong, R.A. Lindskoog, D.W. Sparks, J.R. Smith, T.P. Simon, and M.A. Hanacek. 2002. An assessment of injury to sediments and sediment-dwelling organisms in the Grand Calumet River and Indiana Harbor Area of Concern, USA. *Archives of Environmental Contamination and Toxicology* 43: 141-155.
- Ingersoll, C.G., D.D. MacDonald, W.G. Brumbaugh, B.T. Johnson, N.E. Kemble, J.L. Kunz, T.W. May, N. Wang, J.R. Smith, D.W. Sparks, and D.S. Ireland. 2002. Toxicity Assessment of Sediments from the GCR and IHC in Northwestern Indiana, USA. *Archives of Environmental Contamination and Toxicology* 43:156-167.
- Smith, J.R. 2007. Supplement to Baseline Human Health Risk Assessment Grand Calumet River Feasibility Study Utilizing Uniform Protocol for Great Lakes Sport Fish Consumption Advisory. Report Prepared for Draft Environmental Impact Statement for Grand Calumet River Feasibility Study. IDEM, Office of Legal Counsel. September 2007.

Provided IDEM Oversight/Field Support on Projects

- Ecology & Environment, Inc. 2007. Grand Calumet Feasibility Study Baseline Human Health Risk Assessment. September 2007. Prepared for Indiana Department of Environmental Management., Indianapolis.
- Foster Wheeler Environmental. 2000. Grand Calumet River/Indiana Harbor Canal Indiana: Final Report Restoration Alternatives Development and Evaluation for Natural Resource Damage Assessment. Prepared for the U.S. Fish & Wildlife Service by Foster Wheeler Environmental Corporation, Lakewood, Colorado. Lakewood, CO. December 2000.
- Foster Wheeler Environmental. 2002a. Technical Memorandum: Restoration Alternatives Development and Evaluation, West Branch of the GCR, Indiana. Prepared for the U.S. Fish & Wildlife Service by Foster Wheeler Environmental Corporation, Lakewood, Colorado. February 27, 2002.
- Foster Wheeler Environmental. 2002b. Field and Laboratory Data Report for the Chemical, Physical, and Toxicological Characterization of Roxana Marsh. Prepared for the U.S. Fish & Wildlife Service by Foster Wheeler Environmental Corporation, Bothell, Washington. September 2002.
- Foster Wheeler Environmental. 2002c. Quality Assurance Project Plan, West Branch of the GCR. Prepared for the U.S. Fish & Wildlife Service by Foster Wheeler Environmental Corporation, Bothell, Washington. October 2002.
- Foster Wheeler Environmental. 2003. West Branch of the GCR: Final Site Characterization Report. Bothell, Washington.

- MacDonald, D.D. and Ingersoll, C.G. 2000a. An Assessment of Sediment Injury in the GCR, IHC, Indiana Harbor, and the Nearshore Areas of Lake Michigan (Volumes I-IV). Nanaimo, British Columbia V9T 1W6.
- MacDonald, D.D., D.E. Smorong, R.A. Lindscoog, and C.G. Ingersoll. 2003. An Assessment of Injury to Fishery Resources in the GCR and IHC, the GCR Lagoons, and Indiana Harbor and the Nearshore Areas of Lake Michigan. Volume I - Technical Report. Prepared for US Fish and Wildlife Service, Bloomington Field Office. February
- MacDonald, D.D., C.G. Ingersoll, A.D. Porter, S.B Black, C. Miller, Y.K. Muirhead. 2005b. Development and evaluation of preliminary remediation goals for aquatic receptors in the Indiana Harbor Area of Concern. Technical Report. Prepared for: United States Fish and Wildlife Service. Bloomington, Indiana and Indiana Department of Environmental Management. Indianapolis, Indiana.
- MacDonald, D.D., D.E. Smorong, and J.J. Jackson. 2007. Evaluation of Residual Risks to Ecological Receptors Associated with Exposure to Toxic and Bioaccumulative Contaminants of Concern Following the Implementation of Various Sediment Restoration Options in the Indiana Harbor Area of Concern, Indiana. MacDonald Environmental Sciences Ltd., Nanaimo, BC. Prepared for: United States Fish and Wildlife Service. Bloomington, Indiana and Indiana Department of Environmental Management. Indianapolis, Indiana. April 2007.
- Maxim Technologies. 1999. Sediment sampling and characterization for the Grand Calumet River / Indiana Harbor Ship Canal. Prepared for United States Army Corps of Engineers. Chicago District. Chicago, Illinois. 150 pp.
- Rothrock, P.E. 2007a. Status of Plant Communities Along the Grand Calumet River, Lake County, Indiana Based upon Two Rapid Assessment Methodologies. Randall Environmental Center Taylor University. Report Prepared for U.S. Fish and Wildlife Service. January 2007.
- Rothrock, P.E. 2007b. Evaluation of Plant Community of Seven Wetland Shelves at the Grand Calumet River Feasibility Study Site, Lake County, Indiana: Plant Diversity and Rare-Threatened-Endangered Species. Department of Earth and Environmental Science. Taylor University. Report Prepared for: USACE. CONTRACT NO: W912P6-07-M-0018. July 2007.
- Tetra Tech EC, Inc. 2005. Baseline human health risk assessment of the West Branch of the Grand Calumet River, Indiana. Prepared for United States Fish and Wildlife Service. Bloomington, Indiana. October 2005.
- Tetra Tech EC Inc. 2006. Restoration Alternatives Development Report West Branch of the Grand Calumet River Hammond, Indiana. Prepared for U.S. Fish and Wildlife Service, Bloomington Field Office. 665 pp. April 2006.
- Tetra Tech EC Inc. 2007. Indiana Harbor Area of Concern, Indiana Human Health Risk Reduction Evaluation. Prepared for U.S. Fish & Wildlife Service, Bloomington Field Office. September 2007
- USACE. 1997. GCR – IHC Sediment Cleanup and Restoration Alternatives Project Report.

Chicago, Illinois.

U.S. Geological Survey (USGS). 2002. Surface-Water and Ground-Water Hydrology and Contaminant Detections in Ground Water for a Natural Resource Damage Assessment of the IHC and Nearshore Lake Michigan Watersheds, Northwestern Indiana. U.S. Geological Survey. June.